

DISCUSSION PAPER SERIES

IZA DP No. 13585

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# Top Incomes in Ireland: Reconciling Evidence from Tax Records and Household Survey Data

**Tim Callan**

*Geary Institute, UCD, IZA and Callan Economics*

**Karina Doorley**

*ESRI, Trinity College Dublin and IZA*

**Alyvia McTague**

*ESRI*

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**IZA – Institute of Labor Economics**

Schaumburg-Lippe-Straße 5–9  
53113 Bonn, Germany

Phone: +49-228-3894-0  
Email: [publications@iza.org](mailto:publications@iza.org)

[www.iza.org](http://www.iza.org)

## ABSTRACT

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# Top Incomes in Ireland: Reconciling Evidence from Tax Records and Household Survey Data

There are two main sources of data on income distribution. Household based surveys report mainly on inequality in equivalised household level disposable income. Top income shares, on the other hand, focus on the tax unit as the unit of analysis, because administrative records are obtained from such units. Tax return data is typically analysed in terms of unequivalised fiscal income and obtains better coverage of those at the very top of the income distribution. In this paper, we find that differences in concepts and measures play a very substantial role in accounting for the divergence in the pictures of inequality arising from household and tax return data. Estimates of the share of the top 10% of tax units in fiscal income from the two sources are quite close. Average incomes for the top 1% of the population appear to be substantially higher in tax return data than in SILC - a pattern that has often been observed internationally. We conclude that there is a strong case for examining potential adjustments to survey data to ensure better representation of income levels at the very top of the income distribution.

**JEL Classification:** D31

**Keywords:** top incomes, income distribution, Ireland

**Corresponding author:**

Karina Doorley  
The Economic and Social Research Institute  
Whitaker Square  
Sir John Rogerson's Quay  
Dublin 2  
Ireland  
E-mail: [karina.doorley@esri.ie](mailto:karina.doorley@esri.ie)

## 1. Introduction

Concern about the consequences and causes of economic inequality has become widespread. Academic research which has analysed the extent and impact of inequality has developed and expanded: what was previously seen as a “niche” area has become mainstream. Key publications which would formerly have had a limited audience have become best sellers and award winners (e.g., Piketty, 2014, Atkinson, 2018). International institutions which would have been regarded as favouring free market policies over distributional concerns are now taking a very different view. For example, in series of major reports, the OECD (2008, 2011, 2015) has documented extensively the widespread (though not universal) rise in income inequality in many OECD countries. It has also documented the consequences of rising inequality and explored policy options to attenuate or reverse this trend. Similarly, the International Monetary Fund now places great emphasis on inclusive growth, with inequality being seen as harmful to growth. For example, Aiyar and Ebeke (2019) argue that “the negative impact of income inequality on growth is higher the lower is intergenerational mobility”. At national level too, inequality has become a key theme in public and political debate.

Underlying all of these developments are two quite distinct forms of data – household surveys and tax records– which sometimes seem to tell conflicting stories about trends in inequality.<sup>1</sup> For recent overviews of the different strengths and challenges involved in these data sources, see Lustig (2018) and Kennedy (2019), on which the following discussion draws. Most studies and official statistics on income distribution (including the OECD’s Income Distribution Database and the Luxembourg Income Study) are based on household surveys. These have a great number of strengths, as catalogued by Burkhauser et al. (2018): They focus on the household as an income-sharing unit; they incorporate adjustments using an equivalence scale to take account of how needs differ for households of different sizes and composition; and they take account of the impact of taxes and transfers on disposable income, which is therefore more closely linked with living standards. Household survey also allow a wide range of inequality measures, including many which take account of the distribution over the full range of income, such as the Gini coefficient; and they allow analysis at the level of persons (irrespective of age) rather than simply at household level.

There is, however, one major challenge for household surveys in measuring the income distribution. It is generally expected that household surveys will have difficulty in capturing accurately the very highest incomes – either because those with the highest incomes are less likely to respond to surveys – what Lustig (2018) terms “the missing rich” - or because the incomes they report in surveys do not match with the full income reported to the tax authorities. Tax return data has a comparative advantage in this area – while at low incomes a tax return may not be required, it is compulsory for others, meaning that tax returns provide full coverage of the relevant population for top incomes. Furthermore, the powers and penalties available to the tax authorities mean that the returns filed by taxpayers. Other advantages of tax return data noted by Kennedy (2019) include their large scale, allowing analysis of subgroups for which survey data would not have enough cases; and a strong longitudinal dimension, with taxpayers reporting incomes year after year.

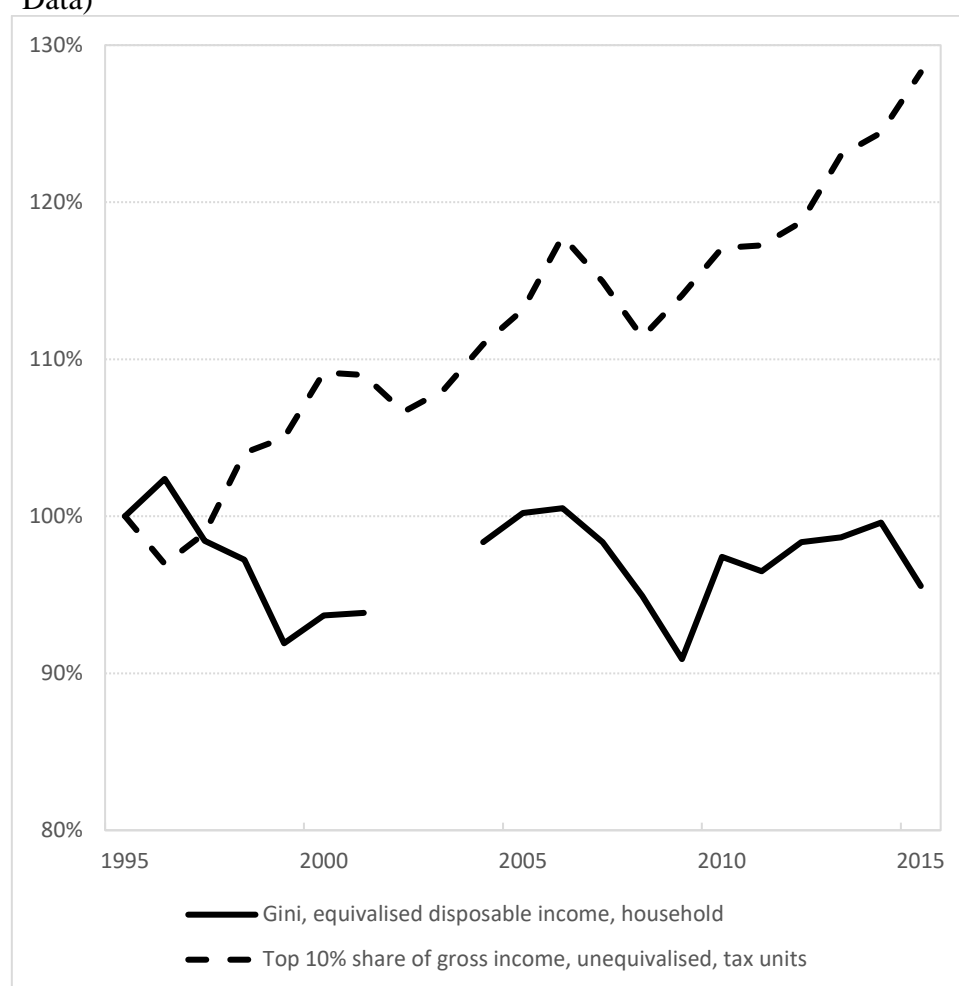
There are, however, other trade-offs here. Tax return data does not provide the same breadth of demographic information as a household survey, tend to underrepresent lower income units, and may not include untaxed transfers. (Kennedy, 2019, Table 1.1). The income-sharing unit

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<sup>1</sup> Burkhauser et al. (2017a) note that “the two main sources of information – household survey and personal tax return data – provide very different estimates of inequality trends”.

is effectively the tax unit, and this is often also the unit of analysis.<sup>2</sup> Most analysis of tax return data is, of necessity, based on gross incomes rather than disposable incomes. Burkhauser et al. also note that inequality measures based on tax return data is restricted to “summary measures (top income shares) that do not incorporate differences across the full income range”. This is because the tax return data do not provide a full picture for those on lower incomes. Instead, the top income methodology uses tax return data in combination with aggregate data on population and national income accounts to generate estimates of the shares of the top 1%, top 10% and so on.

Figure 1: Contrasting Perspectives on Income Inequality, Ireland 1995-2015:  
(Gini coefficient from Household Surveys vs Top Decile Share from Tax Return Data)



Note: Index: 1995=100 for both Gini and top income share.

Sources: Top 10% share:

World Inequality Database (wid.world), analysing “fiscal income” based on tax returns, after Nolan (2018)

Gini coefficient: Equivalised disposable income at household level

1995-2001, Living in Ireland Survey analysed by Callan and Savage (2017)

2004-2015: CSO Survey on Income and Living Conditions

<sup>2</sup> The World Inequality Database now produces some statistics based on an equal split of income between adults in the tax unit, but a household level analysis is not possible from tax record data.

While these considerations may appear rather technical, they have important implications for our understanding of trends in inequality, as illustrated in Figure 1. This shows two of the most commonly quoted statistics on inequality from each of the distinct sources, household surveys and tax returns. The Gini coefficient is perhaps the most frequently quoted statistic on income distribution based on household surveys. On the tax return side, a Gini coefficient for the full population is not possible: tax return data do not cover the full population, and microdata for the full population are needed to calculate the Gini. However, tax return data, in combination with information from national accounts on aggregate income, allow the estimation of top income shares, as tax return data have comprehensive information on the upper reaches of the income distribution. Thus, top income shares, such as the share of the top 10% (or top 1%) are the statistics most usually provided. Figure 1 shows that the trends identified by these statistics are quite different. The Gini coefficient varies within a narrow range and is broadly stable. The top decile income share, by contrast, rises strongly over this period, with only a temporary recession-related fall in the 2008-2010 period. By 2015 the top decile share is almost 30 per cent higher than in 1995, while the Gini coefficient is close to its 1995 level. The “top incomes” statistics, based on gross incomes, unequivalised, at tax unit level suggest a strong rise in inequality over the period. By contrast, the household survey statistics – based on disposable incomes, equivalised, and at household level – suggest a broad stability or slight fall in inequality over the full period.

What gives rise to this sharp contrast? Is it the fact that top incomes analysis has better coverage of incomes at the very top of the income distribution? Or does the contrast arise more from technical factors – differences in income concept (gross versus disposable) or income unit (household versus tax unit) or from the contrast between equivalised and unequivalised incomes? There is a complex relationship between commonly reported measures of inequality based on household surveys and the usual results reported in the top incomes literature. In this paper we first review what international research has found in this area (Section 2). We then turn to a closer examination of the Irish situation (Section 3). We re-analyse household survey data in a way which aligns the concepts and measures used with those in the top incomes literature. Our analysis finds that the apparent gap between the two methods is much less than what commonly used headline measures would suggest. We also indicate the scale of the impact of the different technical factors involved in driving apart the survey and tax return measures of inequality. Section 4 provides evidence on the profile of top decile income units and shows the extent to which differences in income definitions and measurement choices affect the composition of the top 10 per cent group. The final section draws together the main conclusions and some issues for further research.

## 2. International evidence

Household surveys have for many years been the first port of call for broadly-based analysis of inequality levels, trends and international comparisons. Within the European Union, the standard source (since 2003/4) is the EU Survey on Income and Living Conditions, which was designed to provide comprehensive and comparable statistics on income distribution and risks of poverty across the EU. This provides the basis for a wide range of indicators of poverty and social exclusion which are used in a policy setting at national and EU level. Broader international comparisons have been made possible by the Luxembourg Income Study, which harmonises household survey data from a wide range of countries. The OECD’s Income Distribution Database, on which its substantial analyses of inequality rest, is also based on household survey data.

There have been ongoing concerns about whether household surveys provide good representation of incomes at the top of the distribution. Partly for this reason, and partly because tax records are available over a much longer period of time, there has been a revival of the methods used by Kuznets (1953) to examine shares of income accruing to those at the top of the income distribution – often the top 1%, top 5% or top 10%. The recent revival of interest led to a succession of studies has constructed top income share series for a large number of countries (starting with Piketty (2001) for France, Piketty and Saez (2003) for the US, Atkinson (2002 and 2005) for the UK, and the two multi-country volumes edited by Atkinson and Piketty 2007 and 2010). The World Inequality Database (Alvaredo et al., 2018) now provides both a series of publications and an online platform which allows users to examine top incomes in a historical and international context. Ireland is included in this database thanks to contributions by Nolan (2007, 2018). For reviews of this top income literature see Atkinson, Piketty and Saez (2011), Alvaredo et al. (2013) and Alvaredo and García-Peñalosa, (2018).

One thread which emerged in the debate surrounding this work was whether this new perspective from tax return data cast doubt on the picture of inequality which had emerged from previous work using household survey data. For the US and the UK, a small number of studies have examined this issue in depth. Burkhauser et al. (2012) use income data from the US Current Population Survey – a household-based survey - to derive estimates of top income shares which are comparable to those based on tax return data. The methods and definitions developed by Piketty and Saez (2003) and others for use with tax return data were applied by Burkhauser et al. to the household survey data. Resultant estimates for top income shares, in terms of levels and trends, were found by Burkhauser et al. to be “nearly identical” to results from the tax return data for groups in the richest decile, with the exception of the richest 1 per cent. “Even for estimates of the share held by the top 1 per cent the two data sources are broadly in agreement about trends over much of the past 40 years. It is only during a six-year period in the late 1990s that the trends diverge for reasons that are not easily explained by changes in the nature of the two data sources”. Yonzan et al. (2018) perform a similar comparison based on the Current Population Survey for 2013 and also conclude that there is substantial difference of income only within the very top percentile, and almost all of this is driven by the non-labour portion of income – business income and capital income.

In the UK, Burkhauser et al (2018b) note that household surveys do not capture income at the extreme top of the income distribution very well. They argue that using tax return data in combination with survey data is a potential approach to address this problem because tax data are likely to have much better coverage of top incomes. They examine “a pioneering variant of this approach”, the SPI<sup>3</sup> adjustment used in Britain’s official income distribution statistics since 1992. However, they argue that a new approach, in the same tradition, can improve data quality at the top of the income distribution. Burkhauser et al. (2018a) provides the first systematic comparison of top income shares derived from household survey (Households Below Average Income, based on the Family Resources Survey) and tax return data (the Survey of Personal Incomes, SPI). Having reconciled the definitions, they find evidence that very high incomes are not well covered in the survey. The nature of the adjustment they propose is built on careful investigation of the nature of the gaps between top incomes as recorded in the household survey and in tax returns. Ultimately they find evidence favouring an approach which defines 50 income groups, each containing 0.1% of the total population, for the top 5% of income units, and replaces survey-measured incomes with average tax return incomes for each of these high-

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<sup>3</sup> SPI stand for Survey of Personal Incomes, which is a very large-scale sample of tax returns constructed by the UK revenue authorities.

income groups. It is noteworthy that in the UK, the Office for National Statistics intends to finalise a top income adjustment and include it in regular Office for National Statistics (ONS) releases from 2020 onwards (Shine et al., 2019). Top income adjustments have also been made to SILC data. Bartels and Metzger (2019) estimate a Pareto distribution for the top of the income distribution, based on tax return data. They then use these Pareto-estimated top incomes to replace the incomes of the top 1% of tax units in SILC.

In this paper, we follow the first half of the Burkhauser et al (2018a) strategy<sup>4</sup>. We perform a detailed comparison of top income shares for Ireland, comparing the results from tax returns in the World Inequality Database (Nolan, 2018) with appropriately constructed measures based on EU SILC. Only such a comparison can find the extent and location of any potential income undercoverage.<sup>5</sup> Is it restricted to the top 1% or does it extend more broadly? Does it affect the broad trend in inequality? These are the issues to which we now turn.

### 3. Top Incomes in Ireland: Reconciling Survey Estimates and Tax Records

As seen in Figure 1, top income analysis for Ireland indicates a sharp rise in inequality, while the Gini coefficient for household disposable income (adjusted for household size and composition using an equivalence scale) is broadly stable. This is not, however, a “like for like” comparison. There are major differences in the concepts and measures used, as well as differences in the data sources. To what extent is this observed difference due simply to the combined effects of these methodological differences, and to what extent does it reflect differences in the coverage of top-level incomes?

In this section, we are able to answer this question by re-analysing the household survey data, taking one step at a time from the concepts and measures used in top income analysis to the standard household survey measures.<sup>6</sup> We focus initially on the income share of the top 10% of tax units – one of the key measures used in top income analysis. We also note the impact on the Gini coefficient, where this is possible. Our analysis uses SWITCH, the ESRI’s tax-benefit model. The flexibility provided by the SWITCH modelling process allows us to group individuals within households into tax units. A tax unit is defined as a single person, or a married couple, together with their dependent children (aged under 18, and not in employment, in which case they would be counted as independent tax units). At present, we must use simulated tax liabilities and simulated welfare payments in our analysis. While this has some drawbacks – chiefly the fact that actual tax liabilities at high incomes tend to be lower than those simulated by SWITCH<sup>7</sup> – this has little impact on the key comparisons of top income shares for pre-tax income which follow.

The income concept used in the World Inequality Database estimates for Ireland and many other countries is “fiscal income”. A clear understanding of this concept, and how it relates to

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<sup>4</sup> The second part of the Burkhauser et al. strategy is to adjust household survey data based on information from tax return data. We discuss this aspect in our conclusions, in the context of future research possibilities.

<sup>5</sup> The term “undercoverage” includes any mixture of underrepresentation of top incomes in the sample (e.g., through increased non-response at very high income levels) and/or underreporting of incomes by survey participants.

<sup>6</sup> Burkhauser et al. (2018a) refer to this as “cross walking” from survey-based definitions to the tax data definitions.

<sup>7</sup> SWITCH models the main personal credits, and reliefs in respect of pension contributions, mortgage interest relief and health insurance. It does not model the full range of reliefs, some of which are highly concentrated on top income earners. (See Revenue, 2019; Collins and Walsh, 2010; Kennedy et al., 2016) . This affects analyses of disposable income rather than the comparisons of fiscal income which are the core element of this study.



the disposable income measure used in much of the analysis of household income distributions is essential in reconciling apparently conflicting results on inequality levels and trends.

“Fiscal income” refers to income as measured by the fiscal authorities. Irish revenue authorities state that in their Income Distribution Statistics, which are used by WID

"Total" income is the total income of taxpayers from all sources as estimated in accordance with the provisions of the Income Tax Acts. It is net of such items as capital allowances, allowable interest which is not subject to relief at the standard rate, losses, allowable expenses, retirement annuities and superannuation contributions.

Revenue (2012)

Thus, non-taxable sources of income – including many welfare benefits – are excluded from fiscal income. Moreover, fiscal income excludes retirement annuities (largely paid by the self-employed) and superannuation contributions.

The differences between this fiscal income concept, and the concept of disposable income as used by SILC in the construction of Ireland’s national poverty indicators, are summarised in Table 1.

Table 1: Differences between Disposable Income and Fiscal Income

Fiscal income
<b>less</b>
Income tax
Employee PRSI
Universal Social Charge
<b>plus</b>
Non-taxable social welfare payments
Employee superannuation contributions
Retirement annuity contributions
<b>equals</b>
Disposable income

These are major differences in the basic income concept, which can be expected to have a substantial impact on measures of inequality. Income taxes (including USC and employee PRSI) are strongly progressive in most countries, and particularly so in Ireland (Roantree, 2020). Exclusion of non-taxable social welfare payments also omits a further progressive impact of the transfer system. One countervailing factor is the exclusion from fiscal income of superannuation and retirement annuity contributions. This is likely to reduce measured inequality in fiscal income, as studies of the distribution of tax relief on superannuation and retirement annuity contributions (Doorley et al, 2017) suggest that these are concentrated towards higher earners.

We implement this definition of fiscal income on SILC data for 2013, 2014 and 2015 using SWITCH, the ESRI tax benefit model. Before examining the implications in terms of top income shares or other distributional measures, it is useful to compare the aggregate level of fiscal income estimated using SILC and SWITCH. We find that for 2015, this estimate is close to €75 billion. This compares with a figure of €87 billion based on tax returns to the Revenue authorities (and published by CSO).<sup>8</sup> The sources of this sizable apparent discrepancy deserve further investigation but are outside the scope of the current paper. Our focus is on top income shares: If the gap in aggregate income is evenly spread across the distribution, then estimates of top income shares may be similar – our analysis helps to establish how well SILC covers the top income echelons compared with others.

The differences between disposable income and fiscal income are very large and, as will be seen, contribute substantially to the apparent differences in inequality (see Figure 1) as measured by WID, based on tax return data, and by CSO, ESRI and others based on analysis of SILC. It is, however, only one of many such differences in concepts and methods, as Table 2 summarises.

Table 2: Differences in Concepts and Methods

<i>Item</i>	<i>World Inequality Database</i>	<i>Household Income Distribution Analyses (e.g., SILC, Eurostat, OECD)</i>
Data source(s)	Tax returns, National Accounts	Household Survey (SILC)
Income concept	Fiscal income	Disposable income
Income sharing unit	Tax unit	Household
Adjustment for needs of income sharing unit	None	Equivalisation using an equivalence scale (1 for first adult, 0.66 for other adults, 0.33 for children)
Unit of analysis	Tax unit	Individual
Main inequality measure(s)	Share of top 10%	Gini coefficient

Table 2 spells out the other important differences which can contribute to differing picture of inequality.

- WID analysis focuses for the most part on the tax unit as the income unit, and the unit of analysis. SILC-based analyses tend to focus instead on the household as the income sharing unit, and the individual as the unit of analysis.
- WID analyses mainly focus on aggregate income within the tax unit, with no adjustment for the numbers of adults and children relying on that income. SILC based analyses, by contrast, mainly focus on income distribution adjusted, using an equivalence scale, for the size and composition of the household.

<sup>8</sup> We average the Revenue statistics for 2014 and 2015, to take account of the time period covered by SILC incomes.

- WID analyses tends to focus on the share of the top 10% (or top 1%) while SILC analyses tend to focus on broader measures of inequality such as the Gini coefficient or the full set of decile shares.

Table 3 outlines a path from the usual concepts used in analysis of SILC and other household survey data to analysis of household survey data using the same concepts as in the WID's top income analysis. We have implemented this using SWITCH, based on SILC 2015, and can now see the extent to which the changes in income concept and methods help to narrow the apparent gap between household survey-based estimates (SWITCH/SILC) and those based on tax return data (WID).<sup>9</sup>

Table 3: *Top income share and Gini coefficient for Alternative Income Concepts: Leading to Comparable Top Income Shares for Tax Return Data and SILC 2015*

<i>Income concept</i>	<i>Unit of analysis</i>	<i>Equivalised /unequalised</i>	<i>Source</i>	<i>Share of top 10%</i>	<i>Gini</i>
<i>Household income distribution analysis:</i>					
				(%)	
Disposable income	Household	Equivalised	SILC	23.9	30.8
<i>Intermediate steps:</i>					
Disposable income	Household	Equivalised	<b>SWITCH</b>	22.6	29.4
Disposable income	Household	<b>Unequalised</b>	SWITCH	22.9	32.0
Disposable income	<b>Tax unit</b>	Unequalised	SWITCH	29.1	43.5
<b>Fiscal income</b>	Tax unit	Unequalised	SWITCH	38.2	56.6
<i>Top income analysis:</i>					
Fiscal income	Tax unit	Unequalised	WID	37.2	

Notes: On each row the item in bold represents the change in concept or data source from the previous line.

There are some conceptual differences between the SWITCH data and the standard SILC data, as SWITCH works with simulated welfare entitlements and simulated tax liabilities – assuming 100% take up of welfare entitlements and 100% compliance on tax. Furthermore, SWITCH works with annualised current income, which is relevant to modelling of current welfare and medical care entitlements, rather than the annual measure used in CSO's published SILC statistics on income distribution and risk of poverty. Nevertheless, the Gini coefficients and shares of the top decile are similar for SILC and SWITCH.

SILC 2015 estimates the top income share to be just under 24 per cent, when based on equivalized disposable income at household level. This compares with a share based on “top income methodology” (gross, unequalised tax unit income from tax return data) of just over 37 per cent. The “like for like” comparison is a top decile share of just 38.2 per cent from the household survey as against 37.2 per cent from the tax return data. Alignment of the concepts used in the analysis brings the gap between the estimates from 13 percentage points down to one percentage point. The intervening rows show that the major contributory factors are

- moving from household to tax unit as the unit of analysis and
- moving from disposable income (post tax, post transfer) to fiscal income (as defined earlier – this is before all income-related taxes and includes only taxable social welfare payments).

<sup>9</sup> While it is possible to replicate the WID concepts using household survey data, the converse is not true.

While movement between equivalized and unequivalised income has little impact on the top income share, it does have a substantial effect on inequality as measured by the Gini coefficient, across the full distribution.

Table 3 illustrated this “crosswalk” using a particular path (from equivalized to unequivalised, then household to tax unit, then disposable to gross income). The impact of each transition may be dependent on this path, and on the inequality measure examined. We examine this issue in Table 4 (for the Gini coefficient) and Table 5 (for the top decile share).

Table 4: Impact of Changes in Income Concept on Gini Coefficient

Table 4. Impact of Changes in Income Concept on Gini Coefficient					
Change in income concept	Baseline definition				Average change
	Changes in Gini in percentage points				
	Fiscal, Tax Unit	Disposable, Tax Unit	Fiscal, Household	Disposable, Household	
Unequivalised to equivalised	-4.6	-7.0	-1.4	-2.6	-3.9
	Tax Unit, Unequivalised	Tax unit, Equivalised	Household, Unequivalised	Household, Equivalised	
Fiscal to Disposable	-13.2	-15.5	-14.3	-15.5	-14.6
	Fiscal, Unequivalised	Fiscal, Equivalised	Disposable, Unequivalised	Disposable, Unequivalised	
Tax unit to household	-10.2	-7.0	-11.4	-7.1	-8.9

For the Gini coefficient, we find that there is a clear ranking in terms of impact. A move from fiscal to disposable income sees the Gini fall by close to 14 or 15 points, about half of the total impact of these changes. The move from household to tax unit level has the next greatest impact, between 7 and 10 percentage points. The impact of moving from unequivalised to equivalised income is to reduce the Gini coefficient by an average of 4 percentage points. There is some path dependence here: the impact of equivalisation is greater at tax unit level and is sharply attenuated if the income concept has already moved to household level.

Table 5: Impact of Changes in Income Concept on Top Decile Share

Baseline income concept					Average change
Change in income concept	Changes in Gini in percentage points				
	Fiscal, Tax Unit	Disposable, Tax Unit	Fiscal, Household	Disposable, Household	
Unequalised to equalised	-3.7	-3.6	-0.1	-0.3	-1.9
	Tax Unit, Unequalised	Tax unit, Equalised	Household, Unequalised	Household, Equalised	
Fiscal to disposable	-9.1	-9.0	-7.7	-7.9	-8.4
	Fiscal, Unequalised	Fiscal, Equalised	Disposable, Unequalised	Disposable, Unequalised	
Tax unit to household	-7.6	-4.0	-6.2	-2.9	-5.2

For the top decile share, the same overall ranking holds. The greatest impact comes from a move from fiscal income to disposable income— a reduction in the top decile share of about 8 percentage points. The next largest impact is for a move between household and tax unit level – an average fall of some 5 percentage points. Again, the impact of equalisation depends on whether this is at household level, when the impact is very small (less than half a percentage point) or at tax unit level, when the impact is between 3 and 4 percentage points. The impact of moves between unequalised and equalised incomes, and between tax unit and household levels of analysis does, however, depend on which of these is undertaken first. The impact of equalisation is lessened if a move to household level has taken place first; and vice versa.

Table 6 documents the estimation of top income shares using WID concepts (fiscal income, unequivocalised, at tax unit level) to SILC data from 2013, 2014 and 2015. We construct a household survey-based estimate of the top decile share, comparable to that used in top income studies, using fiscal income, unadjusted by an equivalence scale, with the tax unit serving as income sharing unit and unit of analysis.<sup>10</sup> We report the top decile share, and also break this into the component attributable to the top 1 per cent of tax units, and the next 9 per cent.

Table 4: Estimates of top income shares of fiscal income from World Inequality Database (WID) and from SILC using WID concepts

	<u>Top 1%</u>		<u>Next 9%</u>		<u>Top 10%</u>	
	WID*	SILC, authors' estimates	WID*	SILC, authors' estimates	WID*	SILC, authors' estimates
	%	%	%	%	%	%
2013	9.8	7.7	25.9	31.5	35.7	39.3
2014	10.0	8.3	26.1	30.7	36.1	39.0
2015	11.5	8.2	25.7	30.0	37.2	38.2

Notes: \*World Inequality Database (wid.world), “fiscal income”, after Nolan (2018).

These results show that survey-based estimates of the share of the top 1 per cent of tax units tend to be well below the corresponding estimates based on tax returns. Nor does the SILC based series capture the rise in the top income share for 2015. However, the share of the next 9 per cent of tax units based on survey data is above that estimated from tax returns, so that the share of the top 10 per cent of tax units is quite close for the two sources.

#### 4. Profiling Top Income Groups

Given that SILC data is capturing much of the share of the top 10 per cent of the income distribution – with the partial exception of the top 1% - it is of interest to examine the profile of top income cases (as has been done, for example, by Lemieux and Ridell, 2015, for Canada, and Peichl et al., 2010, in Germany). A word of caution is needed, however. The picture of the top 10%, for example, may vary significantly depending on the income concept and unit of analysis used.<sup>11</sup> Table 5 illustrates this by examining those individuals (adults and children) who are in the top 10% of tax units based on fiscal income. We examine where these individuals, are located in the distribution of income based on other concepts. Thus, moving to a household unit of analysis, about three-quarters of those in the top 10% on a tax unit basis remain in the top decile, with the remainder in the 9<sup>th</sup> decile. When needs are taken into account by using an equivalence scale, the proportion remaining in the top decile falls a little further, and some cases are found in decile 8. A further shift to disposable income (post-tax, post-transfer) means that more than 1 in 3 of the individuals in the top decile on tax unit basis are now found in deciles 6 to 9. Most of these are in decile 9 or decile 8. These substantial transitions caution against a simple view that one can take a single income concept and identify “the rich”.

<sup>10</sup> Kennedy et al. (2019) report top decile shares based on tax records. While this is not strictly comparable with the WID concept, which takes into account incomes and persons not recorded by the tax authorities, the orders of magnitude for the top decile share are similar.

<sup>11</sup> The sample size is too small to permit a similar analysis for the top 1%.

Table 5: Proportion of All Persons (Adults and Children) in Top 10% of Tax Unit Fiscal Income by Deciles of Other Income Concepts

<i>Income sharing unit</i>	<i>Tax Unit</i>	<b><i>Household</i></b>	<i>Household</i>	<i>Household</i>
<i>Income concept</i>	<i>Fiscal income</i>	<i>Fiscal income</i>	<i>Fiscal income</i>	<b><i>Disposable income</i></b>
<i>Equivalisation</i>	<i>None</i>	<i>None</i>	<b><i>Equivalised</i></b>	<i>Equivalised</i>
Top 10%	100.0	76.1.	71.4	65.0
Decile 9		23.9	24.4	24.3
Decile 8			4.2	8.3
Decile 7				1.9
Decile 6				0.5
Deciles 1-5				
All	100.0	100.0	100.0	100.0

Notes: **Bold** indicates the change in income concept from the preceding measure, moving from left to right.

A bracket symbol indicates that two cells have been grouped to respect rules on statistical confidentiality.

Table 6 analyses the adults living in top income tax units, ranked by pre-tax, post-transfer income per tax unit. Given that a very high proportion of these tax units (more than 8 out of 10) are married, it is unsurprising to find that numbers of men and women are similar. Analysis by age group shows that there is a strong concentration of adults aged 30-49 in the top income group: 62 per cent of adults in top income units are in this age group, compared with 39 per cent in the general population. There are relatively few top income cases in the young (under 30) or older (over 65) age groups.

Table 6: Profile of Adults in Top Income Tax Units, Ranked by Fiscal Income of Tax Unit

Characteristic		Top 10%	All tax units
Gender	Male	51.0	48.7
	Female	49.0	51.3
	Total	100.0	100.0
Age	<30	3.1	17.6
	30-49	62.6	39.3
	50-64	29.9	25.1
	65+	4.3	18.1
	Total	100.0	100.0
Marital Status	Married	87.5	55.8
	Single	12.5	44.2
	Total	100.0	100.0

Source: Authors' estimates, using SWITCH and SILC

The World Inequality Database also analyses top incomes per adult, on the basis of an equal split of income between adults in a tax unit. We find that on this basis, married individuals would form close to three quarters of the top income population – rather less than the 88 per cent found when analysing on the basis of aggregate tax unit income.

How does the composition of income for top income units compare with that of all units? We examine this issue focusing on direct income (earnings from employment, self-employment, investment income and occupational pensions). Table 7 shows that wage income is the dominant source for all units, and even more dominant for the top decile. Because of the small number of cases in the top 1%, we analyse the top 2% in order to respect rules on statistical disclosure control. For the top 2% of incomes, self-employment becomes much more important than for those lower down the scale, even for the rest of the top 10%. The importance of self-employment incomes at the highest income levels is confirmed by analyses of the Revenue income distribution statistics (see Kennedy et al, 2019, Table 2 and

Table 7: Composition of incomes for top income cases and for all tax units

	Top 2%	Next 8%	Top 10%	All units
Employee Income	75.2	83.6	82.0	71.9
Self-Employed Income	18.8	10.0	11.8	11.4
Investment Income	2.2	1.8	1.9	2.7
Pension Income	3.8	4.6	4.4	14.0
Total	100.0	100.0	100.0	100.0

Source: Authors' estimates, using SWITCH and SILC

## 5. Conclusions

There are now two main sources of data on income distribution. Household based surveys have tended to report mainly on inequality in household level disposable income, equivalised to take account of how household needs differ by family size and composition. Top income shares, on the other hand, tend to focus on the tax unit as the unit of analysis, because administrative records are obtained from such units, and are unable to be combined into households. Tax return data is also typically analysed in terms of fiscal income, and without adjustment to take account of the number of persons supported by that income. However, tax return data is likely to obtain better coverage of those at the very top of the income distribution. Thus, when differences emerge between the pictures of inequality arising from household and tax return data, it is unclear the extent to which they reflect differences in the data and coverage of these sources, and to what extent it reflects differences in the concepts and measures applied to the data.

Our analysis, following methods similar to Burkhauser et al, (2018a), finds that differences in concepts and measures play a very substantial role in accounting for the divergence in results. Estimates of the share of the top 10% of tax units in fiscal income from the two sources – SILC and top income analysis based on tax returns and national accounts – are quite close. Average incomes for the top 1% of the population appear to be substantially higher in tax return data than in SILC – a pattern that has often been observed internationally.



At present, we are faced with a number of trade offs in the choice of data source for distributional analysis. For example, tax returns give more precise information on top incomes, but cannot inform us as to the household context or the incomes of those low-income individuals who are not included in tax returns. These trade-offs cannot be resolved by a simple either/or choice – both have contributions to make to our knowledge, with the balance between the two depending on the question at hand. We concur with Kennedy (2019) who states that “The future of best-practice tax policy analysis is likely to combine the unique advantages of tax, survey and national accounts data”. In this spirit, we make the following suggestions, based on our findings to date.

One key difference between the “top incomes methodology” and the household survey based analysis relates to the income sharing unit. For the former, data is collected and analysed at tax unit level – this can be a single individual, a married couple or civil partners. For the latter, it is most often the case that analysis is undertaken at household level. There is, however, potential for moving to a common unit, under the assumption of equal sharing between couples. WID provides some analysis at this level, and household based surveys can do likewise. The substantive value of this is that it takes a step towards recognising variation in needs across tax units. A further step in this direction would be to adjust for the numbers of child dependants in the tax unit.

There is a strong case for examining potential adjustments to survey data to ensure better representation of income levels at the very top of the income distribution. Such adjustments combine information from tax returns and household surveys to give better representation of top incomes, while retaining the advantages of household data’s perspectives on low incomes and household context. Burkhauser et al. (2018a, b) suggest an improvement on the pioneering adjustment of UK household data using tax returns from the Survey of Personal Incomes can now be implemented. Shine et al. (2019) confirm the commitment of the Office of National Statistics to such an approach. Bartels and Metzger (2019) apply adjustments to the incomes of the top 1% in SILC, based on estimates of the Pareto distribution of top incomes using tax return data. The analysis undertaken here represents a building block which can be used in investigating appropriate top income adjustments for the Irish case. This will allow distributional analysis to move beyond balancing the pros and cons of household survey and tax return data, to investigations which combine some of the best aspects of both approaches.

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